

# Lazy lounging layers

**STANDARD 3200-02** Students will compare and contrast the structure of Earth's crust and interior.

**OBJECTIVE 3200-0201** Construct and defend a model of Earth's crust and interior.

To compare and contrast the process involved in forming clastic and nonclastic evaporative sedimentary rocks.

## Intended Learning Outcomes:

- 1a. Make observations and measurements.
- 1b. Develop and use categories to classify observations.
- 1d. Make predictions based on observations.
- 2g. Construct models to describe natural phenomena.
- 5c. Understand science concepts and principles.

## Background:

Sedimentary rocks are formed in two different ways and can be classified on the basis of texture and composition. The two groups are clastic and nonclastic. Clastic rocks are formed from fragments of other rocks. For example over time the particles of sand may slowly become cemented together as water slowly soaks through the sand particles leaving behind natural cements, joining the individual particles of sand together to form sandstone.

Nonclastic rocks are also known as organic rocks, chemical rocks or evaporite rocks. They are formed by chemical or organic process. Halite (salt) is an example of a nonclastic evaporative rock. Halite can be formed when a salty lake such as the Great Salt Lake goes dry. The water evaporates leaving behind layers of salt.

## Time Required:

30 minutes class time; 2-3 days drying time

## Summary:

Students will simulate the processes involved in forming clastic and nonclastic sedimentary rocks using glue and gravel. They will observe the differences between the two types of rock.

## Materials:

- 3 paper cups
- Elmer's glue
- 1/2 cup of gravel

## Safety concerns:



Be sure to keep all Chemical Safety Rules that are specified by your teacher and in all general laboratory experiences, as well as [all teacher directions](#).

## Procedure:

Step 1. In the bottom of one paper cup punch several holes with the end of a pencil. The holes should be small so the gravel will not fall through them.

Step 2. Fill the cup with the holes in the bottom about 1/2 full of gravel.

Step 3. Mix one part Elmer's glue to about 5 parts water to make about 1/3 cup of glue solution.

Step 4. Hold the cup with gravel slightly over the empty paper cup. Carefully pour the glue solution over the top of the gravel letting it run through the gravel and into the empty cup beneath the cup with gravel. Repeat this process several times pouring the glue solution through the gravel and into the paper cup beneath.

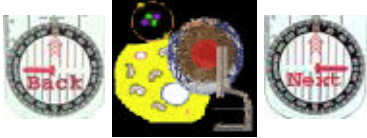
Step 5. Allow the glue solution to drain through the gravel and into the cup beneath for a couple of minutes. Set the cup with the glue solution aside. Place the cup with gravel inside an empty cup. Place the cup with the glue solution in it and the cup with the gravel mixture in a location where they can dry for 2-3 days.

Step 6. After the glue has had sufficient time to dry, tear the paper cups away from the dried glue solution and the dried gravel and observe the results. (Be sure the glue has dried in both cups before you tear the cups away).



**QUESTIONS:**

1. Compare and contrast the two new simulated rock specimens.
2. Which rock specimen most closely resembles a nonclastic rock? Explain your answer.
3. Where might you expect to find rocks in the formation process today that resemble your nonclastic rock?
4. Which rock specimen most closely resembles a clastic rock? Explain your answer.
5. Where might you expect to find rocks in the formation process today that resembles your clastic rock?



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